No. 7
April 30, 1956

T R O P I C A L H O U S I N G & P L A N N I N G

M O N T H L Y B U L L E T I N

for Dr. C. A. DOXIADES*

I. Current Literature

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Hot Dry Areas	--
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II. Field Reports --

III. Special Articles --

Further information on any of the digests may be obtained on request by reference to the Bulletin no. and the item no.--i.e., 2.3 would refer to New Zealand. Minister of Housing. Housing, 1955. Wellington, Government Printer, 1955. 38p., plans, tables, chart.

* This report has been compiled for private circulation only by Prof. J. Tyrwhitt, 77 Trowbridge Street, Cambridge, Mass., USA.

I. CURRENT LITERATURE

GENERAL

1. Centros regionales de vivienda en Asia y el lejano Oriente. (In Vivienda & planeamiento, July- Aug, 1955, no. 18,p.9.)

This news note states that the Committee of Commerce and Industry of the United Nations Economic Commission for the Far East has had, since 1952, a group working on housing and materials of construction and that this group now has recommended the establishment of centers for technical studies on housing.

It is pointed out that in many regions certain scarce materials are used, thereby adding to construction costs, whereas there should be introduced local materials easy to manufacture and transport. This procedure would reduce construction cost and stimulate manufacture.

Such a program naturally presupposes a study and investigation of local conditions and methods of work.

Since there is pressing need in the Far East for new housing, and since varying conditions exist there, there is suggested the establishment of two study centers: one for the investigating of the areas of humid climate - this to be established at Bandung, Indonesia; and one for the study of the hot dry climate of India. The exact locale of this Indian Center is not mentioned.

2. Nuevo Departamento de Arquitectura Tropical en Londres. (In Vivienda & planeamiento, July - Aug. 1955, no. 18, p. 10.

The Architectural Association of London has established, under the direction of E. Maxwell Fry, a Department of Tropical Arctutecture. The new department started its first course of six months in Oct. 1954, with 29 students, many from tropical countries all over the world. The course is intensive. Based on the supposition that every student is already sufficiently familiar with design and construction, major emphasis is on those aspects of architecture which present problems based on the special underlying conditions of the Tropics. Its principal object is to give the student a broad understanding of the effect of climate and of social and economic factors in the solution of problems of design.

This brief note ends with the address: The School of Architecture, The Architectural Association, 34-36 Bedford Square, London, W.C.I.

3. Ginsburg, Leslie B. Regional planning: a note on the International Conference on Regional Planning and Development. (In Town planning review, Jan. 1956, vol. 26:4, p. 238 - 241.)

This Conference was held in London in Sept. 1955. Its program was built around four major planning projects: The Tennessee Valley project, U.S.A.; the Indian project for improving Villages; the Volta River project in West Africa; and the plan for the Ivrea sub-region in Italy. The second and the third of these projects fall within the tropical area but, unfortunately, the papers as reviewed here are not directly concerned with housing. Mr. T. Swami Nathan of the Indian High Commission in the United Kingdom described the Indian Village development project.

The speaker introduced his paper by reminding the Conference that 67 per cent of the world's population live in under-developed countries where only 15 per cent of the world's wealth is produced. In North America, 7 per cent of the world's population produce 40 per cent of the world's wealth. Such figures help to put the Indian programme into proper relation with other development schemes.

Community development began in 1952, with the aim of transforming the life of village India, through the mutual self-help of the villagers. At present the projects cover 16 million people in over 25,000 villages, and by 1961 it is expected that four-fifths of rural India will be included.

The basis of the scheme is the Mandi Unit, whereby several villages are grouped around a central 'key' village, containing various facilities, including a market, a clinic and veterinary services. Near the centre of a group of Mandi Units a settlement will be developed into a small industrial town, so that relationships may be established between industry and agriculture at local level. As with T.V.A., the approach is a decentralised one, working through existing institutions. In this case the village council is the local body whose efforts are being helped in order to encourage the villagers to improve their sanitation and housing, build roads and learn a more scientific agriculture. Technical advice and encouragement to the village comes from a government official known as the 'village level worker,' who obtains what outside assistance he can in the way of expert help. He also tries to obtain other assistance in finance and materials, within the general programme of the Mandi Unit. The 'village level worker' is not necessarily a technician, and hardly ever a professional person. His is a crucial appointment in the whole scheme and there is obvious difficulty in recruiting the right type of man. On him will depend to a large extent the attitude of the villagers towards the scheme, whose successful outcome depends in turn on the ability of the villagers to change their

outlook and habits. Small funds and administrative difficulties are the two chief dangers.

It was pointed out in the discussions that the use of local institutions was not always possible, and in areas like parts of Africa, with a shifting cultivation and scattered settlement pattern, other means of creating local self-help would have to be used.

The review of Mr. J. G. Liverman's paper on the Volta River project is concerned with over-all regional planning considerations and makes no mention of housing plans.

I. CURRENT LITERATURE

HOT, HUMID AREAS

4. Navarro, Hugo. Manual para el mejoramiento de la vivienda panamena. Panama, Departmento de Urbanizacion y Rehabilitacion, 1955. 68p. Illus., plans, elevations, cross sections, sketches.

Colon. Temp. 95° - 66° F.
Rainfall 127"
Balboa Hgts.
Temp. 97° - 63°F.
Rainfall 69"

This manual is based on the results of study and research undertaken in 1954 under the anspices of the Instituto de Fomento Economico and the U.S., Technical Cooperation program.

The first section is devoted to the predominance of housing materials in each section and the geographic distribution of the population; the plan of the area of study; and samples of the housing analysed in each section during 1954. It consists of no text but of maps clearly demonstrating this data. Attached are plates.

The second section, entitled, "Improvements applicable to rural housing in Panama," follows:

Improvements Applicable To
The Rural Dwelling
In Panama.

I- Drinking water.

A- Construction of the cistern for the storage of rain water.
B- Location of the "tinaja" (large earthen jar) in the sub-soil witha wooden cover for the harnessing of surface waters.
C- Excavation of the pit.

II- Latrine.

A- Construction of the latrine in accordance with the standards established by the Department of Public Health.
Note. Consult the instalation of drinking water and construction of the latrine with the local Inspector of Public Health.

III- Cupboards.

A- For kitchen utensils.
B- For clothing storage.
C- For grain, work tools and domestic utensils. The barn can be built separate or intregrated with the dwelling. If possible, contact with the ground must be avoided. (This aspect must be checked with the Inspector)

IV- Animals

A- Space for the "cerreta" (space where the cart is kept).
B- Construction of the corral.

C- Pigpens.

V- Cloths washing and bath.

A- The washboard may be built in the following places: river, streamlet, near the pit, in the handiest place for the realization of the work. This work must be done at an approximate height of 1.00 meter, this way the woman will be in a less strenous position. We have to avoid the woman working in a crouched position, since this contributes to physical exhaustion.

VI- Kitchen.

A- Avoid the smoke in the room.
B- High stove (90 centimeters).

VII- Garbage.

A- Avoid the spreading of the garbage around the house, and teach it can be buried, burnt, or used as a fertilizer.

VIII- Dirty waters and rain waters

Avoid the throwing of dirty waters around the house. Taking advantage of the sloping ground, a small channel can be dug to deviate them.
B- To avoid the stagnation of rain water, its been taught to excavate a small trench, following the natural slopes of the ground.

IX- Forestation.

Teach that the trees may be used as protection against winds, rain and sun. This is taking advantage of the most adequate variety of vegetation from the hygienic point of view, and locating them at adequate distances from the dwelling. Also it must be considered the possibility of using vegetation for fences.

X- Porch.

A- To protect the house totaly or partially according to the orintation.
B- Relate the living room with the porch.
C- The porch is also very useful in the service area.

XI- Dining room

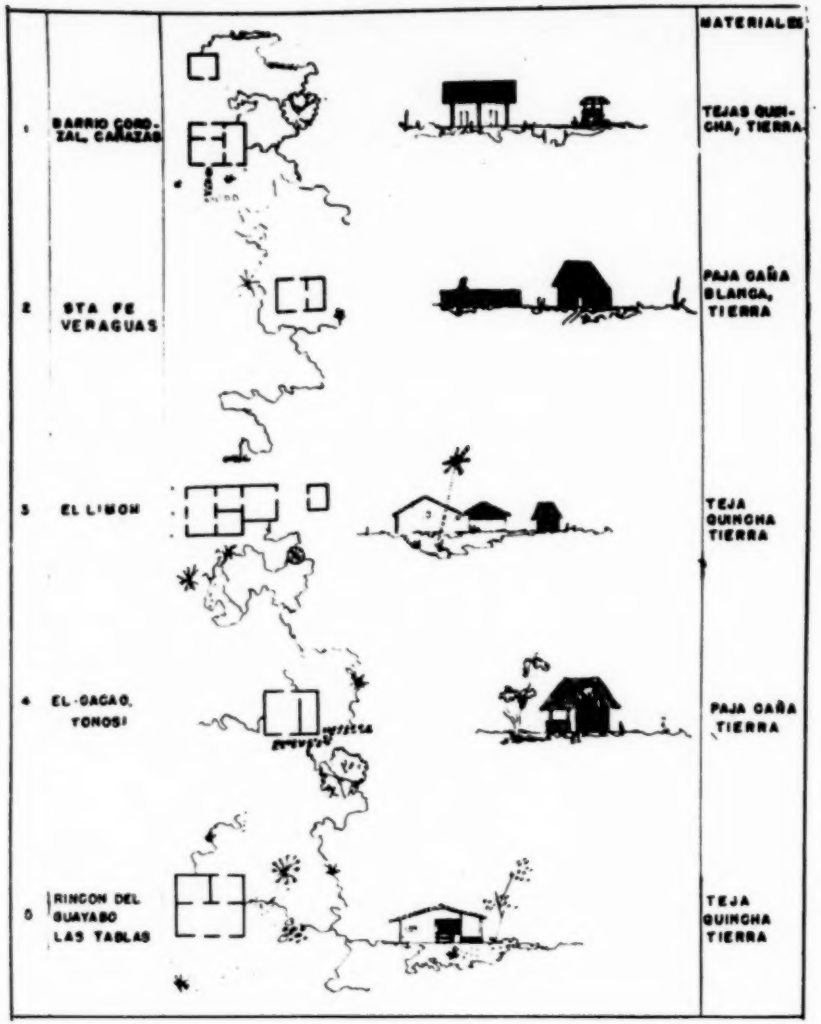
A- Must be apart from the kitchen
B- Must be maintained apart from the living room.

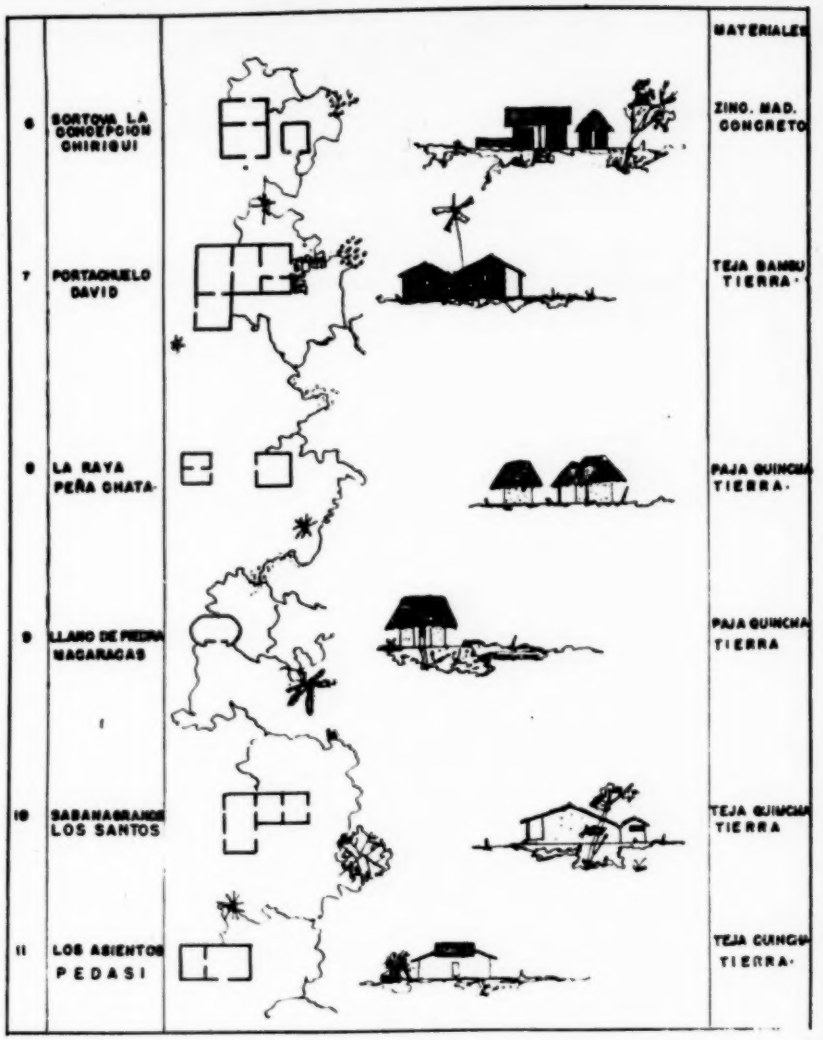
XII- Preservation

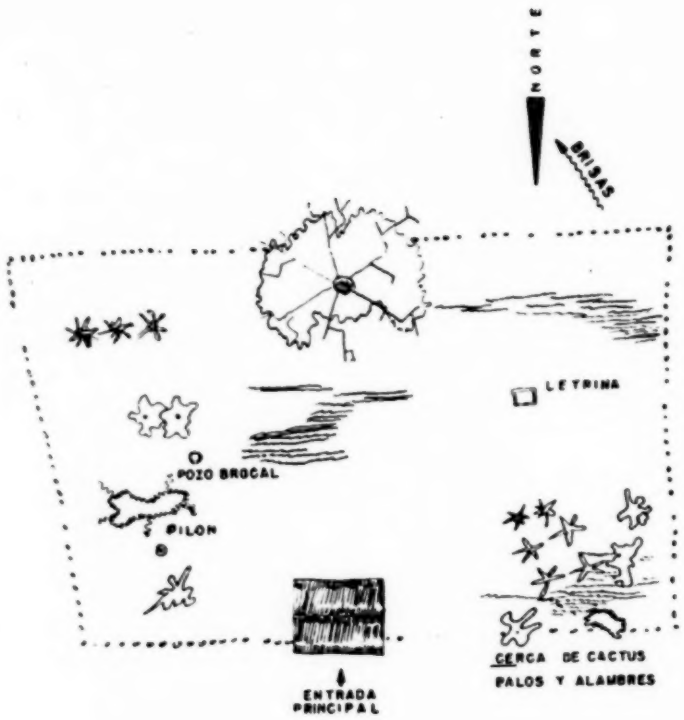
A- Bedrooms.-Beds (in available materials), double bed, single bed bunks. This naturally depends on the habits of the family, in many places it's usual to sleep in hammocks.

	MATERIALES EN TECHO	PAREDES
1	PAJA	MAD
2	ZINC	"
3	TEJAS	ADOBE
4	PAJA	CAÑA
5	ZINC	MAD
6	PAJA	QUINCHA
7	TEJA	"
8	ZINC	MAD
9	PAJA	CAÑA
10	TEJA	QUINCHA
11	"	"
12	PAJA	CAÑA
13	TEJA	QUINCHA
14	PAJA	"
15	"	CAÑA
16	ZINC	MAD
17	"	"
18	TEJA	CONCRETO
19	PAJA	CAÑA
20	"	"
21	"	"

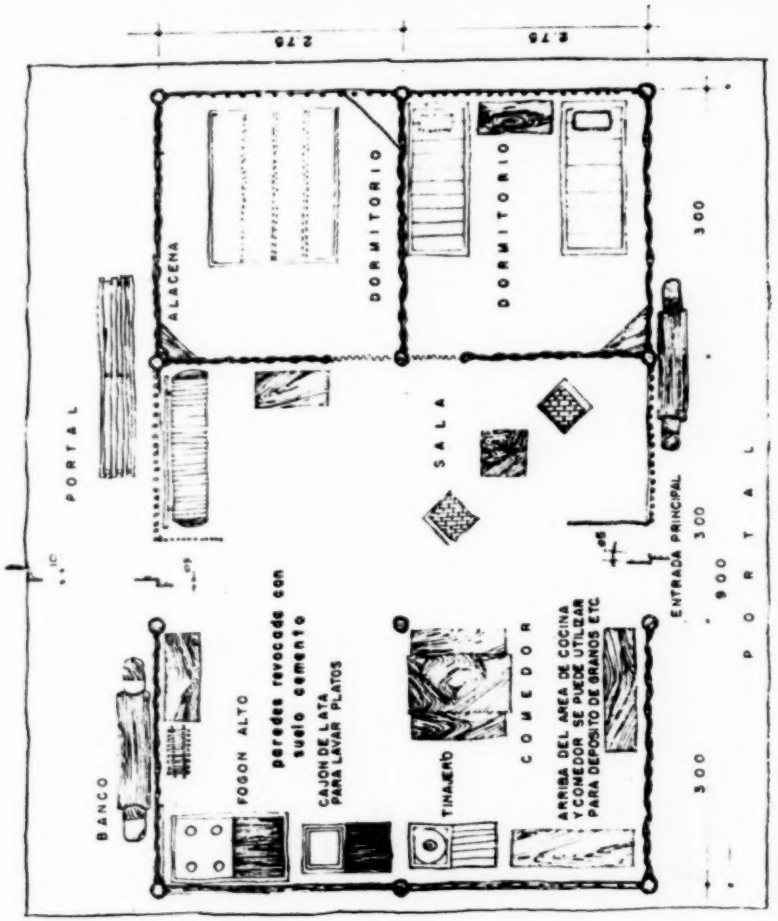
TIPOS PREDOMINANTES DE MATERIALESEN LA VIVIENDA DE CADA PROVINCIA Y DISTRIBUCION GEOGRAFICA DE LA POBLACION, SEGUN EL CENSO DE POBLACION Y VIVIENDA
(CADA PUNTO REPRESENTA 100 PERSONAS APROXIMADAMENTE)


MATERIALES
1 BARRIO GONZAL. CAÑAZAS
TEJAS QUINCHA, TIERRA
2 STA FE VERAGUAS
PAJA CAÑA BLANCA, TIERRA
3 EL LIMON
TEJA QUINCHA TIERRA
4 EL GACAO, TONOSI
PAJA CAÑA TIERRA
5 RINCON DEL GUAYABO LAS TABLAS
TEJA QUINCHA TIERRA

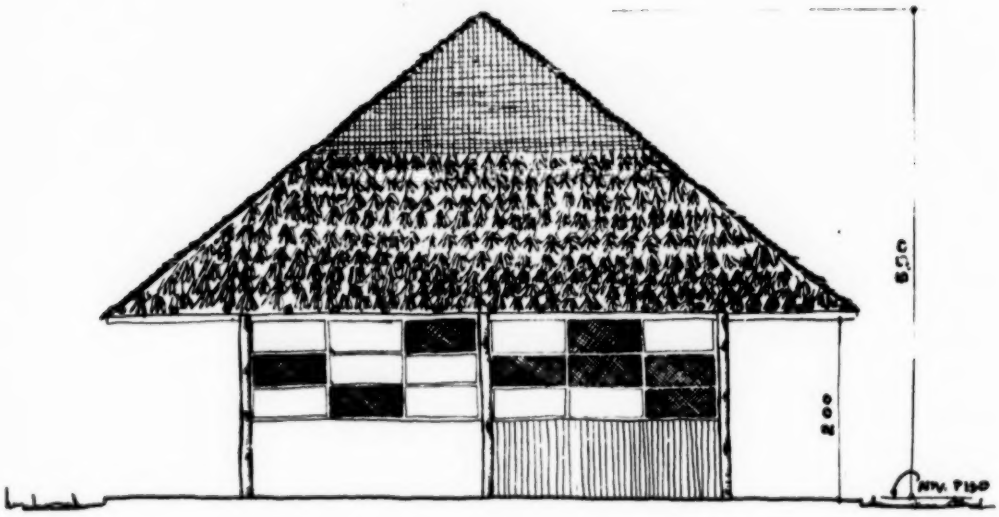

MATERIALES
6 SORTOVA LA CONCEPCION CHIRIQUI
ZINC. MAD. CONCRETO
7 PORTACUELO DAVID
TEJA BAMBU TIERRA
8 LA RAYA PEÑA CHATA
PAJA QUINCHA TIERRA
9 LLANO DE PIEDRA MACARACAS
PAJA QUINCHA TIERRA
10 SABANAGRANDE LOS SANTOS
TEJA QUINCHA TIERRA
11 LOS ASIENTOS PEDASI
TEJA QUINCHA TIERRA



TRAZADO Y UBICACION DEL CONJUNTO

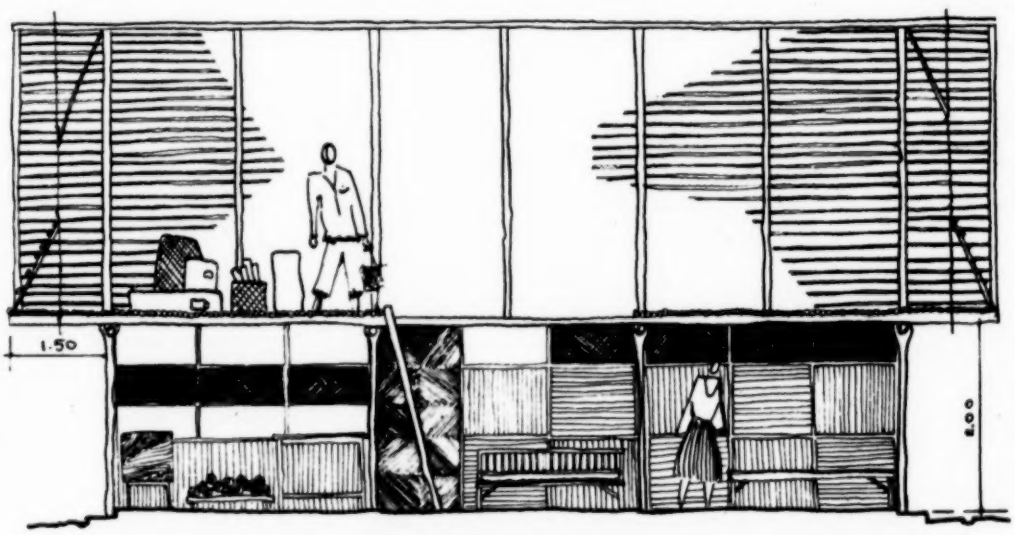


VIVIENDA TIPO VEGETAL PLANTA ESC 1:50



ELEV LAT IZQUIERDA

ESCALA 1:50



SECCION LONGITUDINAL

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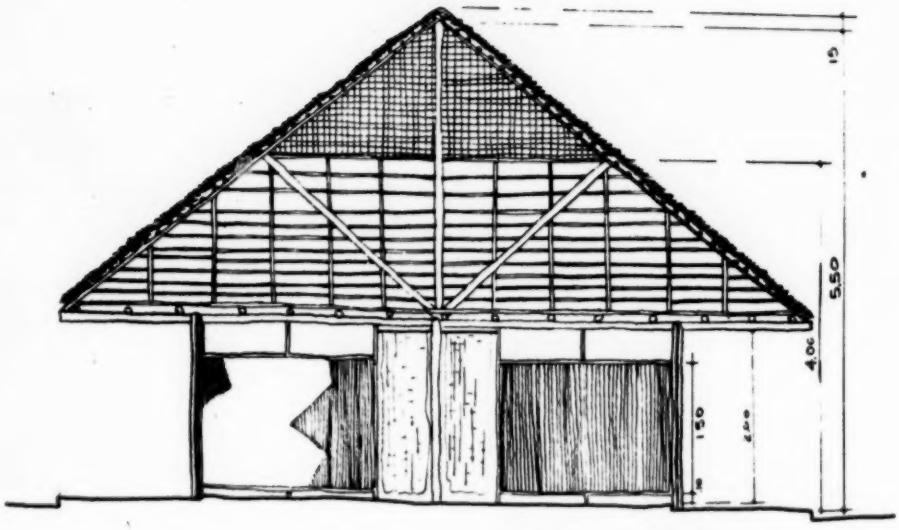
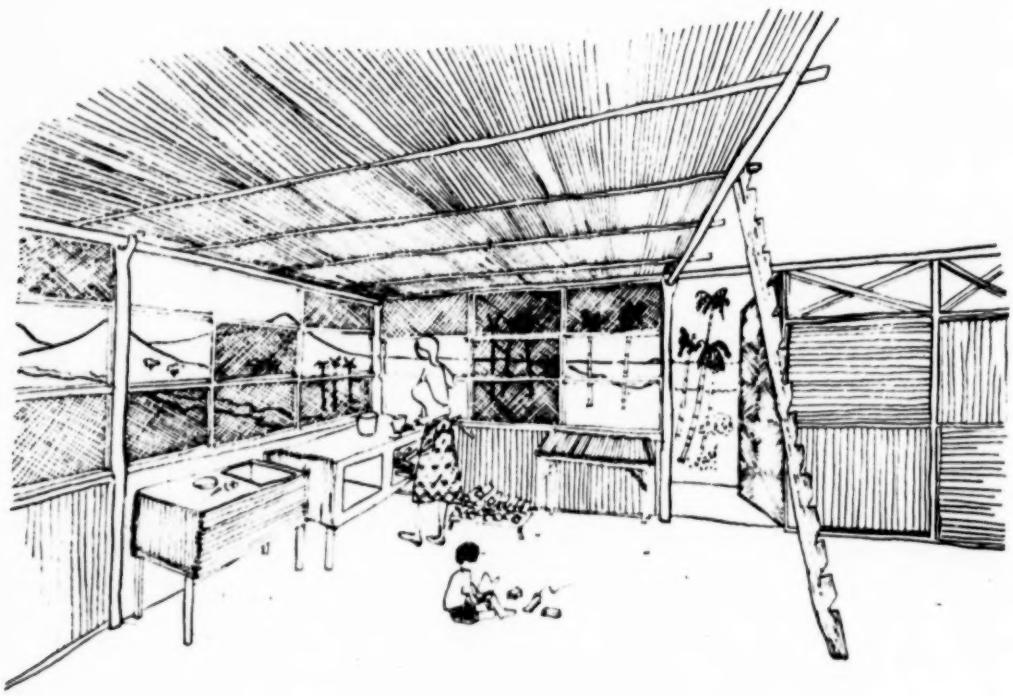
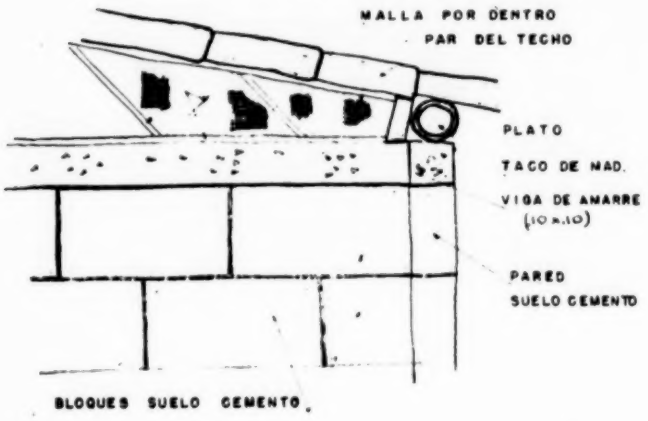


SECCION TRANSVERSAL
ESCALA 1 50



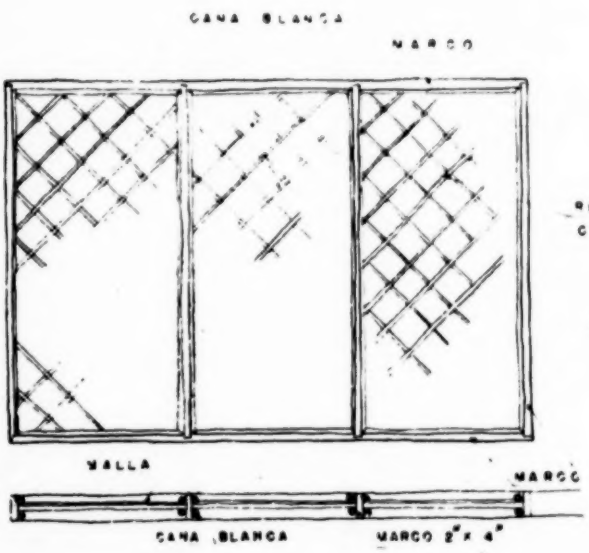
VISTA INTERIOR DE LA COCINA

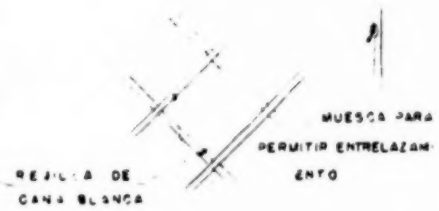
DETALLES PARA TECHOS DE BAMBU



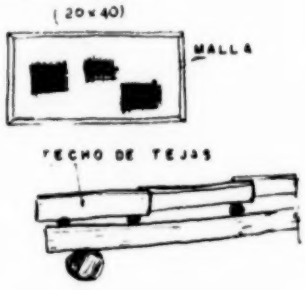
DET DE UNION DE LA VIGA DE AMARRE CON LA ESTRUCTURA DEL TECHO

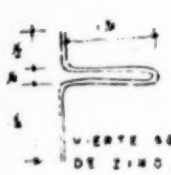
VIGA DE AMARRE

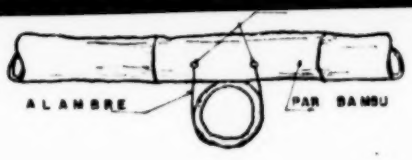


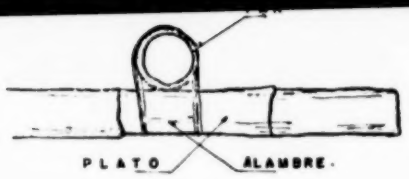


DETALLE DE LA ABERTURA DEL FRENTE



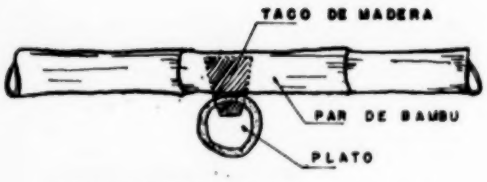






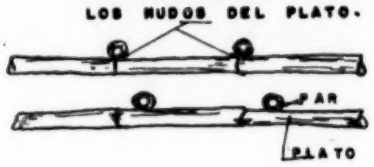
DETALLES DE AMARRE DEL PLATO A LOS PARES DEL TECHO

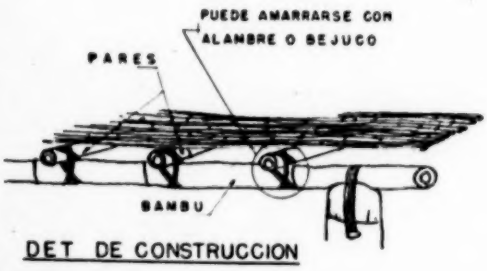
LOS PARES DEL TECHO SE ATAN AL PLATO CON ALAMBRE QUE PASE ATRAVES DE LAS PERFORACIONES REALIZADAS EN EL PLATO PARA CONSEGUIR UN AMARRE RESISTENTE.



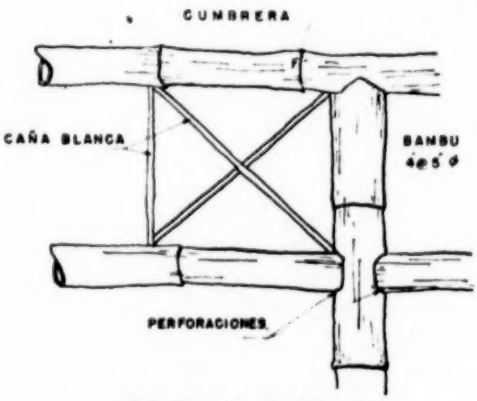
AMARRE MEDIANTE EL USO DE UN TACO QUE PENETRE POR EL PAR (PERFORADO) HASTA INTRODUCIRSE EN EL PLATO

SE DEBE PROCURAR QUE LOS PARES QUEDEN SOBRE O CERCA DE LOS NUDOS DEL PLATO.

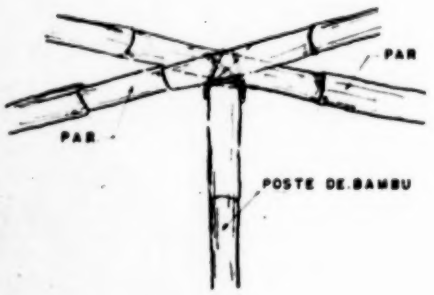




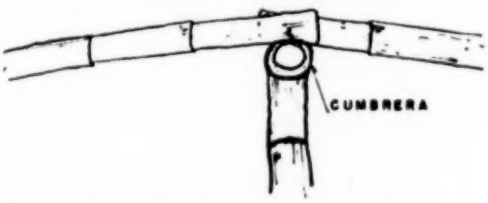
DET DE CONSTRUCCION

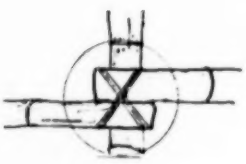


DET EN LA ENTRADA A LAS RECAMARAS

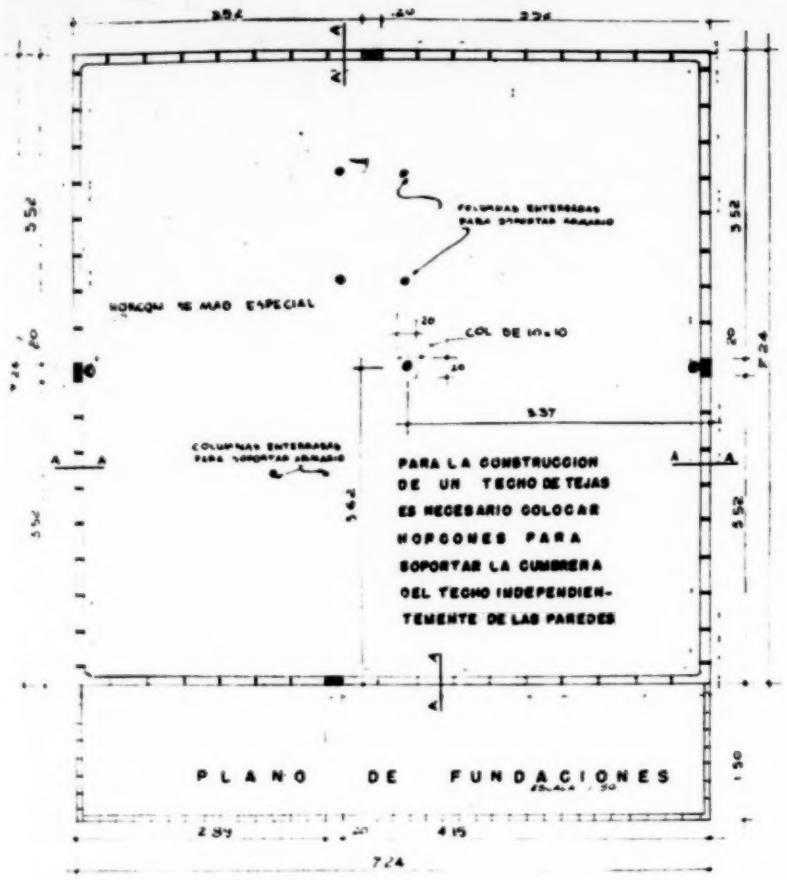


DET DE AMARRE CON ALAMBRES

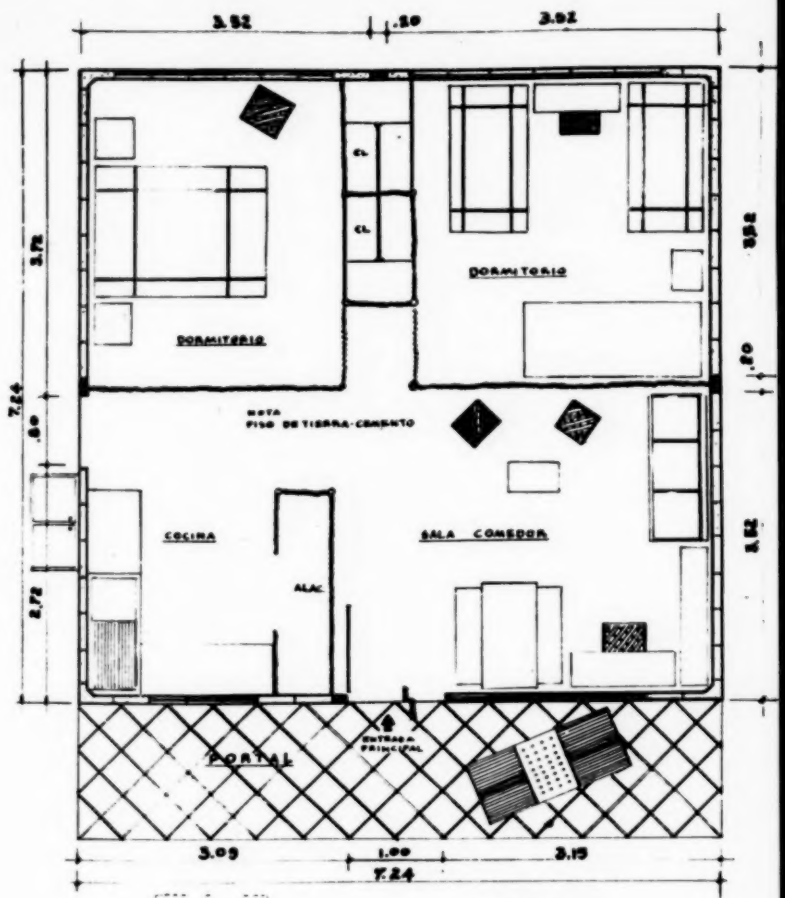




DET DE AMARRE CRUZADO

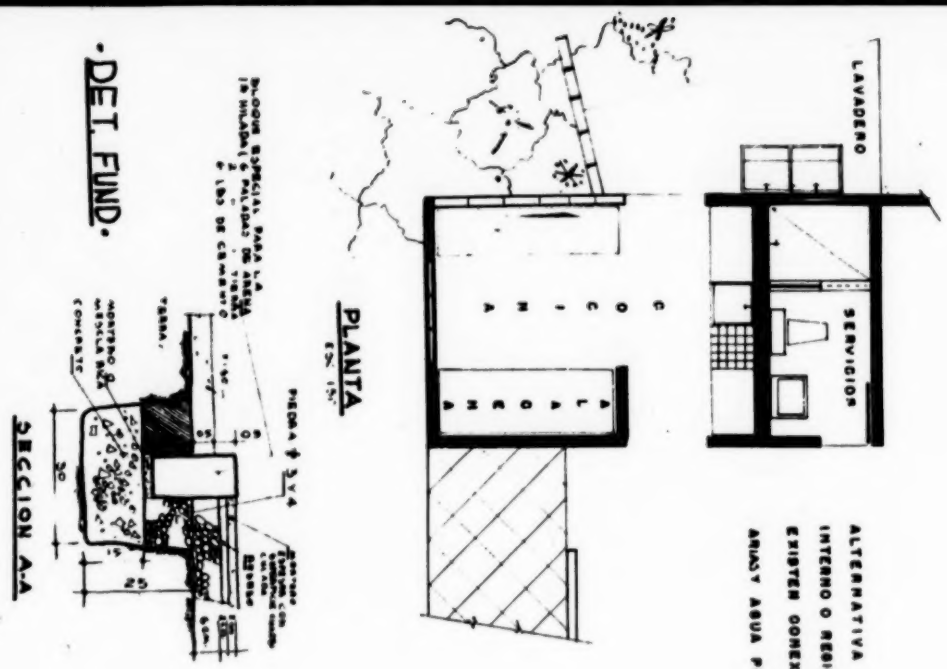


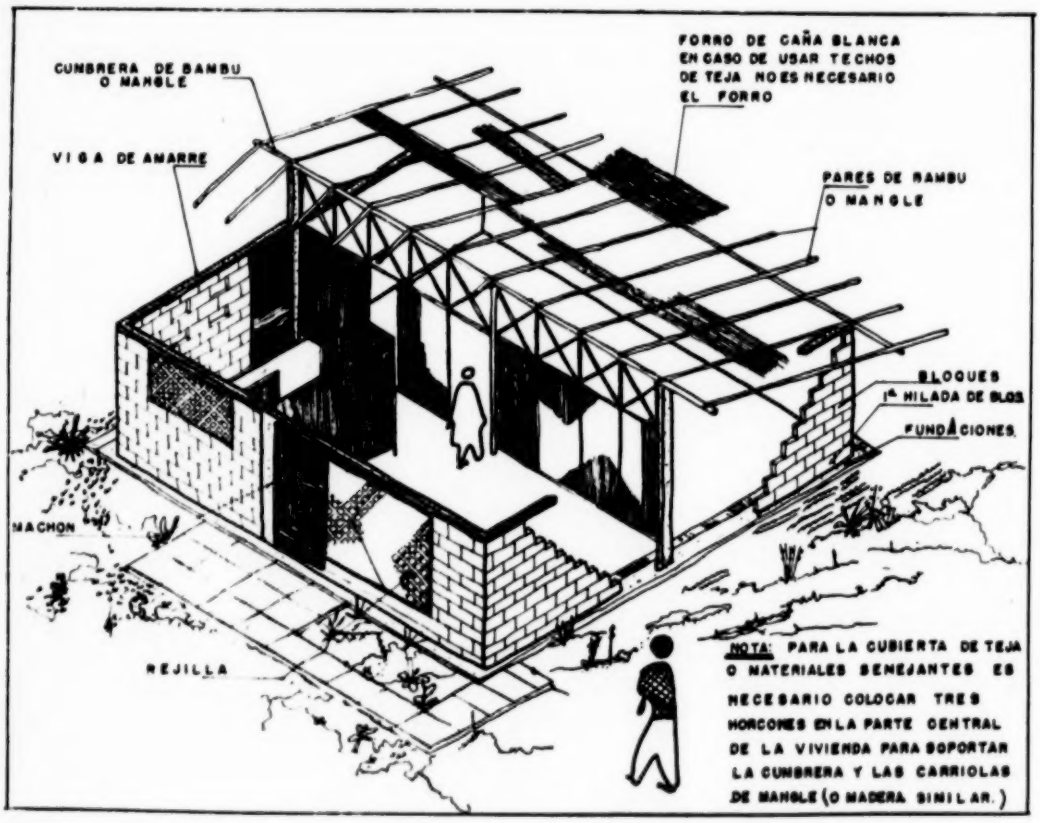
NOTA EN CASO DE CONSTRUIR LAS DIVISIONES INTERIORES CON BLOQUES DE SUELO-CEMENTO ES NECESARIO VACIAR LAS FUNDACIONES CORRESPONDIENTES



PLANTA
ESCALA 1:50

NOTA: CASA PUEDE CONSTRUIRSE EN DOS ETAPAS


DET. FUND.
SECCION A-A
PLANTA
LAVADERO
SERVICIOS
ALTERNATIVA DE SERVICIO INTERNO O REGIONES ADONDE EXISTEN CONEXIONES SANITARIAS Y AGUA POTABLE


CUMBRERA DE BAMBU O MANGLE
VIGA DE AMARRE
FORRO DE CAÑA BLANCA EN CASO DE USAR TECHOS DE TEJA NO ES NECESARIO EL FORRO
PARES DE BAMBU O MANGLE
BLOQUES
1ª HILADA DE BLOS
FUNDACIONES
MACHON
REJILLA
NOTA: PARA LA CUBIERTA DE TEJA O MATERIALES SEMEJANTES ES NECESARIO COLOCAR TRES HORCONES EN LA PARTE CENTRAL DE LA VIVIENDA PARA SOPORTAR LA CUMBRERA Y LAS CARRIOLAS DE MANGLE (O MADERA SIMILAR.)

B- Dining room. -Big tables with benches, cupboard to store the dishware, storage of earthenware for drinking water.
C- Living room. -Chairs and small table.
D- Porch. -Seating benches.

XIII- Preservation

A- Walls. -Interior and exterior walls may be treated with a coating of cement mixed with pulverized dirt, this way, the cracks in the adobe walls may be prevented.
A flat surface avoids insects that might be dangerous.
B- Roofs. -All the wood used for structures must be treated with any bituminous product or DDT. The thick wood can be treated with a coat of tar in the ends, (there are types of wood like the mahogany and the bitter cedar in which the insects can't penetrate.)
If hollow wood is used (bamboo or white cane) it is advised to cover the ends with wood stoppers, saturated with tar.
C- Floors. -Dampness must be avoided in floors; this can be accomplished raising the interior level over the exterior and utilizing beaten clay floors (in case a base of dirt is being used.)

The third section, entitled "materials and methods of construction for the rural areas of Panama", includes sections on foundations, flooring, walls, roofs, openings, details such as paints, hinges, bolts, etc. Following this is a statement by Engineer Arturo Romero Ortega giving instructions for the making of soil cement structures.

Instructions For The Manufacture Of Soil-Cement.

This is a material made of clay, sand and cement; its mixtures are determined according to the characteristics of the soil that is going to be used.

Analysis of the dirt.

The first thing the Chief of Commission in charge of the dwelling must do is to look over the site where it will be built, having in mind the best topographic conditions of the land, concerning the location; also that the site is appropriate to manufacture the walls of soil-cement, this is, clayey, and take advantage of the material extracted.

Once the site is demarcated, the Chief of Commission will procede to test the dirt and find the correct mixtures to fabricate the soil-cement. This test is done as follows:

a) All the top soil is removed by a laborer with a pick and shovel, exposing the clay sub-soil layer, without dirt or top-soil.
b) Once it is ready, the Chief of Commission procedes to take a sample of the ground, approximately 2 pounds.

c) Once the sample is dry, he will procede to grind it and then sift it through a sieve that separates the thick parts from the fine ones; it is advisable to use a sieve that has 16 to 20 holes per square inch.
d) Having the dirt in these conditions, procede to the analysis, and determine the percentage of sand and clay. It is done the following way:

1- Take a cylindrical jar with a wide mouth. Divide it into 20 equal parts, marking the divisions on a piece of paper adhesive tape, which is stuck to the jar, leaving the marks from down up, this is, the number one near the bottom, and the 20 near the mouth.
2- Having prepared the jar this way, it will be filled with the dirt already prepared, and then slowly decanted until the jar will only have sand. When the clay is mixed with water it dissolves and leaves the jar, remaining with only the sand.
3- Having done this operation, the Chief of Commission reads the jar on the tape duly marked, the amount of sand that came out and then determines the sand-content of the ground. That is to say, if in the jar, one mark of sand remained, it represents the 10%, three 30% and so on in ascendent order.

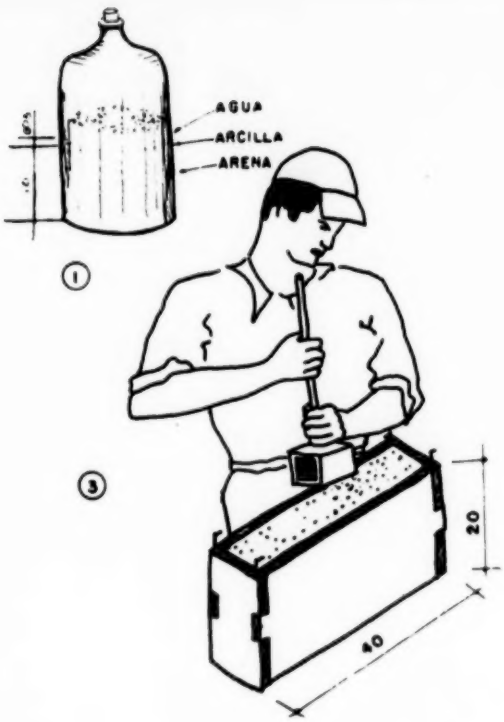
If the percentage of sand is less than 20%, more sand must be added to the clay at the time of the fabrication of the adobe, as it is not advisable to make material of this kind with less than 20% or more than 50% of sand.

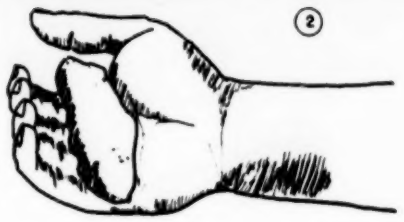
Having already the result of the analysis, the Chief of Commission procedes with the fabrication of the material in the way indicated below:
1- Work over with a pick the selected and prepared ground in a sufficient amount to produce the number of blocks needed for the construction of the dwelling. (One easy way of determining the volume of necessary dirt, is calculating the volume of blocks, and multiplying by two.)
2- Once its well chopped, let it dry on the sun for three or four days, and then pass it through a sieve as it was done to test the sample. Having the dirt ready, procede to mix it with dry cement, in the proportions established by analysis.

Attached are plates illustrating Sr. Ortega's article.

The fourth section is on basic considerations and plans for rural housing in specific sections of the country. This section is presented graphically; there is no text. Some of these plates are attached.

The fifth and last section covers various items of built-in furniture, such as benches and chairs, beds and tables. Plate attached.



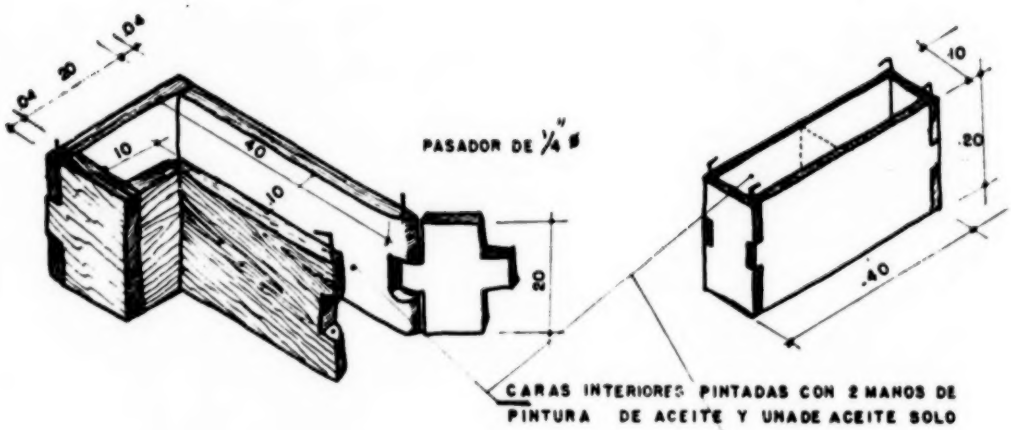


① INVESTIGACION DEL PORCENTAJE DE ARENA EN LA TIERRA (vease instrucciones para la fabricacion de suelo cemento

② METODO PARA PROBAR O DETERMINAR EL GRADO DE HUMEDAD APROPIADO

practicamente puede controlarse la humedad si al apretar un puñado de tierra aquiere cohesion no ensucia la mano y permite ser partida en dos

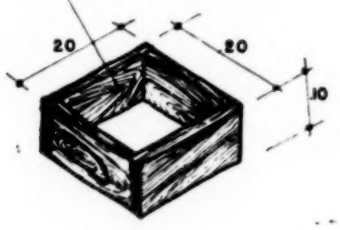
③ APISONAMIENTO DE LOS BLOQUES DE SUELO CEMENTO



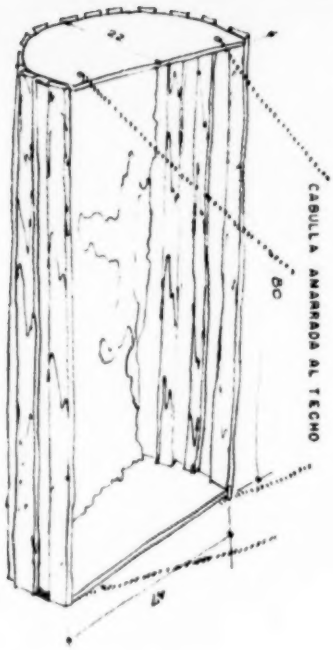
FORMALETA PARA LA MANUFACTURA DE BLOQUES DE SUELO CEMENTO

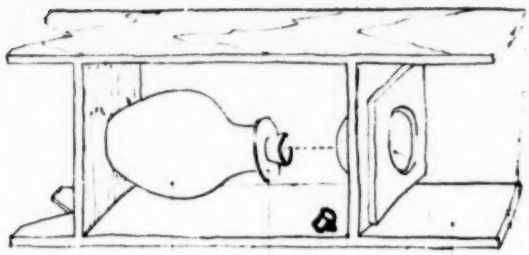
1 BLOQUES ESQUINEROS

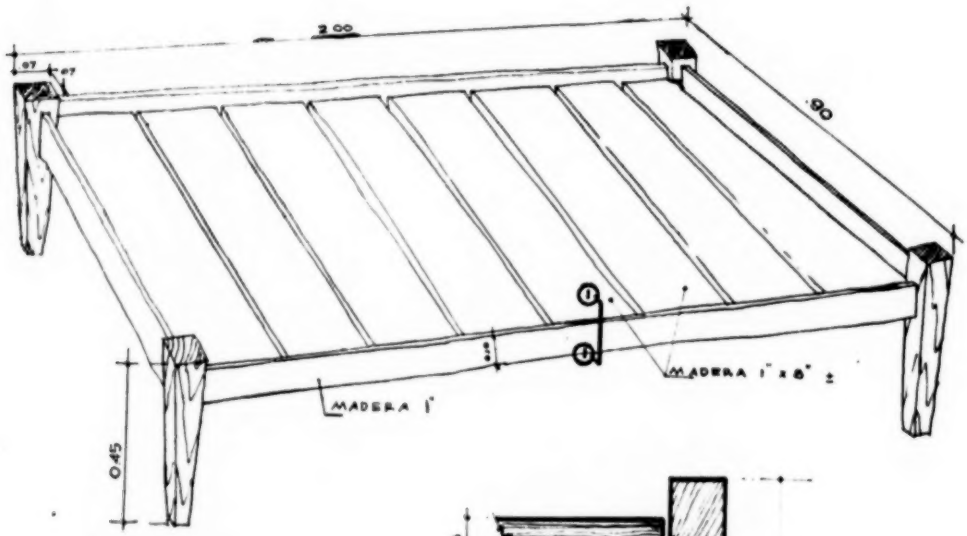
2 BLOQUES CORRIENTES Y MEDIO BLQ



CUNA

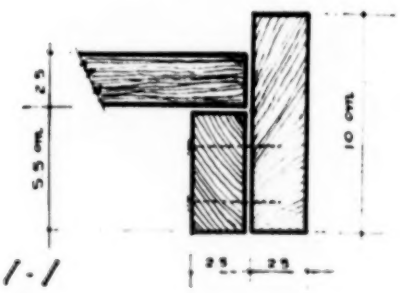






CAMA

ESCALA 1/5



DET 1-1

I. CURRENT LITERATURE

Hot, Humid Areas

Parelkar, Shri S. H. Application of town planning in the cities and rural areas and their effects on housing problems. (In Quarterly journal of the Local Self-Government Institute, Bombay, Apr., 1955, vol. 25:4 p.761-772,774.)

Bombay data

Population: 2,839,270
Climate: 100° - 56 F
Rainfall: 72"

This paper was delivered before the Indian Institute of Architects on Feb. 10, 1955. After a general summing up of British town planning legislation the author devotes his attention to the City of Bombay, and its suburbs, and its general planning. He mentions the establishment of an Improvement Trust because of the spread of plague in 1896; the consideration of a Greater Bombay Council (in 1925 and 1933) which would have jurisdiction in planning matters; in 1938, the inclusion of Kurla into Greater Bombay was achieved; and in 1945 the Government appointed the Bombay City and Suburbs Post War Development Committee, appointing 3 panels to advise on, "Development of Suburbs and Town-Planning, "Housing and Traffic and Railway"*

There follows detailed analysis of the present legislative background for replanning in the Bombay area. This replanning includes housing, but individual housing schemes are not described in detail. The following quotations however may prove of interest.

The Improvement Trust Department did excellent work in erecting buildings on Ex-trust-plots and thus beautifying the City, and if such Improvement Trust Schemes are made applicable for the purpose of control on land in the areas which are appreciably developed such Schemes will be more suitable and economical. The major overcrowded development of the City included in the areas of the T. P Schemes Nos. 2,3 and 4 is the development on freehold plots sold by the Municipal Corporation during last 30 years. If right steps could have been taken before sale of such plots, and if the Municipal Corporation could have carried out improvements, road widening, laying drains in accordance with the plan with regular lines marked and sanctioned previously by the Corporation and carried out these works as obligatory on the part of the Municipal Corporation under Section 289-A and 282(1) and (2) of the Municipal Act, then there would have been no need now to enact T. P. Schemes for these areas. Even by applying T. P. Schemes in these areas, the question of Ribbon Development will not be solved. Although the suburbs have been newly developed, no attempt was ever made in planning to discourage Ribbon Development.

* so written, but probably the absence of quotation mark after Housing is a typographical error, and that "Housing"is the 2nd of the three panels.

How far the new Bombay T. P. Act of 1954 will work with regard to following factors: -

(1) Will it benefit to the architectural profession and will it result in creative efforts.

(2) Will the standard of architectural and engineering design be improved by the working of the Act.

(3) Will it be in interest of the public of the areas to what T. P. Schemes are made applicable.

(4) Will it solve the housing problem and be in interest of the property owners and the tenants.

(5) Will it impede construction work and bring fresh un-employment? . . .

Recently a new Bombay T. P. Act of 1954 has been passed, and it will shortly come into force. The State Government had appointed a Special Select Committee in last September for the purpose of amending the Bill. The Bill was rushed through without giving the public of these areas included in the Schemes to offer their suggestions or objections. The Property Owners' Association made representation on the T. P. Bill 1954 that all constructive suggestions made with a view to enable the Bombay Municipal Corporation to improve the City in a planned manner have not been accepted and the Bill as framed originally was passed by both the Houses of the State Legislature.

Under the New Act the defects revealed in the working of the provisions of the B. T. P. Act 1915, have been cured. That Act is now extended to the whole of the City of Bombay. Under Section 21 of that Act a T. P. Scheme can be made in accordance with the provisions of the Act in respect of any land which is (1) in course of development or (2) likely to be used for building purposes or (3) already built upon. Under the new Act a Scheme can be framed in respect of the areas covered by Schemes Nos. 2,3 and 4. By Section 90 of the new Act the old Act of 1915 is repealed.

The problems for development of undeveloped lands is quite different to those lands which have been already developed. The latter would need a special survey for collecting a data of social and economic conditions of the people. Due considerations to existing industries, encouraging further growth of industries, providing suitable accommodation to dis-housed people, transport problem- all these considerations should be considered from the point of National and State interest.

Adequate provision should be made in the Act to consult the owners and to consider their suggestions, objections and grievances as well. Usually the development plans are prepared by a T. P. Officer and the location of markets, schools, fire-brigade-stations, etc., if decided in consultation with the

property owners of the locality, then in that case many hardships that are likely to be caused to the residents can be minimized, due to locating of these buildings in wrong position. . . .

In working out the costs of original value of the plot, it is estimated at its market value if the date of the declaration of intention to make a Scheme with all the buildings and work thereon at the date and without reference to improvements contemplated in the Scheme other than improvements due to the alterations of its boundaries.

The incremental value is the amount by which at the date of the declaration of intention to make a Scheme the market value of a plot included in the final Schemes estimated on the assumption that the Scheme has been completed would exceed at the same date the market value of the same plot estimated without reference to the improvements contemplated in the Scheme.

Usually the T. P. Officer estimates the original value of the plot too low than the rate prevailed then. If the plot is required to be made regular in shape then semifinal value is estimated to the extent Rs. 5 more per square yard over the original value assessed. Final value of the plot is estimated exhorbitantly in order that the amount of incremental value can be increased as the local authority will recover contribution as betterment charges for the development as per Scheme from a property owner. Increment is worked out as a difference between the final value and semi-final value of the plot.

The local authority proceeds on the basis that the major cost of a T. P.Scheme comes out of the increase in the valuation of lands under T. P. Schemes

If cities like Bombay and other town are not excluded from the present Act this Scheme of Finance will not be found workable as the claim for compensation may exceed the amount recoverable by way of betterment charges owing to the general depreciation in land value. When such Schemes with restrictive regulations on buildings and users are framed for fully developed commercialised and industrialised area the land values would deprecitae.

The land which is usually with a structure thereon cannot be separately assessed for determining its incremental value. Besides the assessment of the market incremental value of the plot alone on the immaginary assumption that the Scheme has been completed is surely likely to go wrong. This estimated valuation is mere paper calculation. When a man buys land the price he pays depends on his own bargaining power and owner's willingness to sell such a plot. It will be noticed that there are very few sales of the properties including open plots in the areas included in the T. P. Schemes and during last 3 years and that these

properties, had to be disposed of at 30% to 40% below the market value. So when a man goes to sell a plot, it may not recover the amount estimated by the T. P. Officer and he may be required unnecessarily to pay when there is no actual benefit or increase. Besides, the enforcement of the Rent Restriction Act in the area prevents owners from increasing the rents. So the contention of the local authorities that the value of the properties would appreciate is wrong. Apart from the lands with buildings thereon will not even if the open plots are developed with the building bye-laws restrictions and even if the rents were to be charged according to the Rules laid down by the Rent Restriction Act, it will be beyond the ability of the people to pay such enhanced rent considering their limited income.

The hardship of unbearable betterment charges should be minimised but the Act as it stands and makes a joint provision for the developed and undeveloped areas cannot mitigate the hardship. The local authority should reduce the betterment charges, so as not to exceed 5% of the value of land and that a provision should be made for recovering a proportionate share from the occupants (tenants). . . .